REMARKS

Claims 1, 4-7, 9-16, 18-21 and 23-39 are now present in this application.

Claims 1 and 16 have been amended, and claims 27-39 have been added. Reconsideration of the application, as amended, is respectfully requested.

Claims 1, 4-7, 9-16, 18-21 and 23-26 stand rejected under 35 USC 102(b) as being anticipated by Japanese document 6-171236. This rejection is respectfully traversed.

According to the English abstract of JP 6-171236, the optical recording medium disclosed therein comprises a recording layer 3 laminated on the upper surface of a substrate 1 through a heat-resistant protective layer 2. The recording layer is formed from an Al or Au layer 3-2 and a Ge layer 3-1, wherein, at the time of recording, the Al/Au and Ge layers are mutually thermally diffused to generate a reflectivity difference.

The recording mechanism of JP 6-171236 is based on thermal diffusion. According to the Japanese specification (section 0017), the area of Ge layer irradiated by a laser is heated to induce thermal diffusion between the interface of Ge and Al/Au layer. After thermal diffusion, the irradiated area becomes Al/Au-rich and thereby increase the reflectivity.

As the so called "mutual thermal diffusion" is actually mainly one way diffusion from Al/Au layer to Ge layer, the "reflectivity

difference" resulted by thermal diffusion is only elevation, i.e., the reflectivity after irradiated can only be increased, but cannot be decreased; the recording of "low to high" is possible, but "high to low" is impossible. As the Japanese specification of JP 6-171236 describes, the only way to record "high to low" by this recording medium is to exchange the Al/Au layer and the Ge layer. However, the recording sensitivity will be lowered. Also, the recording is only one way from high to low, but cannot record "low to high" and "high to low" at the same time, and, moreover, the structure is contrary to that of the present invention.

Furthermore, as mentioned in present specification, the recording medium of JP 6-171236 can only produce an elevated optical contrast after recording, not lowered, making it incompatible with the specifications of signal modulation of current optical recording medium, and thus limiting its applications.

In the present application, the optical recording medium disclosed in claim 1 comprises a substrate, a transparent layer disposed thereon which has a predetermined thickness that is reactive (optically or thermally) with a reflecting layer disposed thereon to form a semi-transparent reflective area of alloy/compound near the interface there between, and a reflecting layer disposed on the transparent layer, which is reactive (optically or thermally) with the transparent layer of the

predetermined thickness to form a semi-transparent reflective area of alloy/compound near the interface of transparent layer and reflecting layer after the optical recording medium is exposed to the optical beam, wherein the semi-transparent reflective area is able to activate a mechanism that produces positive or negative optical contrast before and after recording.

Comparing the claimed features of the present application with JP 6-171236, it is noted that JP 6-171236 does not disclose a semi-transparent reflective area of alloy/compound formed by the transparent layer and the reflecting layer. In addition, the optical contrast after recording via the reaction between Al/Au and Ge layers is only elevated, not lowered, which indicates that the recording mechanisms of JP 6-171236 and the present invention are basically distinct from each other.

Compared with the information-recording mechanism of JP 6-171236, in which only higher reflectivity is resulted by thermal diffusion, the information-recording mechanism in the present invention (a) reduces the effective thickness of the transparent layer, altering the respective optical path lengths, resulting in a shift of constructive or destructive interference patterns; and/or (b) transforms the optical constants (n and k) and thus the reflective intensity; and/or (c) alters the polarization angle, which not only changes the conditions for the repetitive multiple reflections.

Therefore, the claimed features of the present application, capable of both lowering and elevating optical contrast and achieving better performance in the invention, should not be considered anticipated by or obvious over JP 6-171236.

To more specifically differentiate the present invention from JP 6-171236, claims 1 and 16 have been amended to recite a transparent layer with a predetermined thickness, for that the reflecting layer will react therewith to form the semi-transparent reflective area (optical or thermal reactant of transparent layer and reflecting layer) which activates an optical recording mechanism that produces optical contrast before and after recording, and thereby the novelty of the present invention should be clear.

Furthermore, according to the specification of JP 6-171236 (section 0016), in order to increase the recording sensitivity effected by diffusion, Al/Au layer and Ge layer have to touch directly without hindrance caused by, e.g. oxide. Therefore, oxides may not exist in the Al/Au layer and Ge layer.

However, in the present invention, owing to different recording mechanism from JP 6-171236, optical contrasts are not limited to reflectivity changes resulting from thermal diffusion, and materials including oxides are applicable for the transparent layer and reflecting layer.

To further clarify the difference between the present invention and JP 6-171236, a new independent claim 27 applying at least one oxide in transparent layer has been added. This independent claim 27 is novel and non-obvious over JP 6-171236, since it teaches away from the claimed invention by excluding oxides in the transparent layer. Another unique merit of the present invention is being able to produce positive and negative optical contrast, as characterized in claims 1, 16, and 27, for example, therefore the novelty and distinction from JP 6-171236 should be clear.

Accordingly, it is respectfully submitted that independent claims 1, 16, and 27, as well as their dependent claims, are neither taught nor suggested by the prior art utilized by the Examiner. Reconsideration and withdrawal of the 35 USC 102(b) rejection are therefore respectfully requested.

Favorable reconsideration and an early Notice of Allowance are earnestly solicited.

In the event the Examiner does not consider this application to be in condition for allowance, it is respectfully requested that this Amendment be entered for the purposes of Appeal. This Amendment should overcome the current grounds of rejection and therefore simplify the issues for Appeal. Nonetheless, it should be unnecessary to proceed to Appeal because the instant application should now be in condition for allowance.

In the event that any outstanding matters remain in this application, the Examiner is invited to contact the undersigned at (703) 205-8000 in the Washington, D.C. area.

Attached hereto is a marked-up version of the changes made to the application by this Amendment.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

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Attachment: Version with Markings to Show Changes Made

(Rev. 02/20/02)

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

The claims have been amended as follows:

1. (Twice Amended) An optical recording medium for recording and retrieving information with an optical beam comprising:

a substrate;

a transparent layer having a predetermined thickness that is reactive (optically or thermally) with a reflecting layer disposed thereon to form a semi-transparent reflective area of alloy/compound near the interface there between, comprising a material selected from the group consisting of Si, Ge, GaP, IP, GaAs, InAs, GaSb, InSb, In-Sn oxide, tin oxide, indium oxide, zinc oxide, titanium oxide, Sb-Sn oxide, or combinations thereof disposed on the substrate; and

a reflecting layer disposed on the transparent layer, which is [optically] reactive (optically or thermally) with the transparent layer of the predetermined thickness to form [and forms] a semi-transparent reflective area of alloy/compound near the interface of transparent layer and reflecting layer after the optical recording medium is exposed to the optical beam, wherein the semi-transparent reflective area activates a mechanism that produces positive or negative optical contrast before and after recording.

16. (Twice Amended) A method of optically recording information on an optical recording medium comprising a substrate, a transparent layer having a predetermined thickness that is reactive (optically or thermally) with a reflecting layer disposed thereon to form a semi-transparent reflective area of alloy/compound near the interface therebetween, comprising a material selected from the group consisting of Si, Ge, GaP, InP, GaAs, InAs, GaSb, InSb, In-Sn oxide, tin oxide, indium oxide, zinc oxide, titanium oxide, Sb-Sn oxide, or combinations thereof

disposed on the substrate, and a reflecting layer [optically] reactive (optically or thermally) with the transparent layer of the predetermined thickness disposed on the transparent layer, which comprises irradiating the transparent layer of the predetermined thickness and reflecting layer with an optical beam to form a semi-transparent reflective area of alloy/compound therebetween, wherein the semi-transparent reflective area is able to activate a mechanism that produces positive or negative optical contrast before and after recording.

Claims 27-39 have been added.